I024308-001

Fw: Bayer Incident report (draft)

Robert Miller to: Norman Spurling 08/08/2012 08:43 AM

Hi Norm,

Sorry. I forgot for a moment that we need a submitter.

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----- Forwarded by Robert Miller/DC/USEPA/US on 08/08/2012 08:42 AM -----

From: Steve Ellis <nhbabsellis@gmail.com>
To: Robert Miller/DC/USEPA/US@EPA
Date: 08/03/2012 05:09 PM
Subject: Bayer Incident report (draft)

Dear Bob,

Attached is Bayer's DRAFT version of my incident related to clothianidin treated corn seeding.

I do not agree with their conclusions, however, there is a lot of detail in the farmer reports related to seeding and the 2 sets of lab analysis Gastonia and Bayer. Different results on the same-split samples.

Good to visit with you, i will forward other incidents as I become aware of them.

Keep up the good work, incident reporting is critical to understanding honey bee mortalities.

Steve Ellis Bayer MN-2012-Bee Incident Report -draft2July-v2.pdf

Draft Report

Investigation of a May 1, 2012 Bee Kill Incident Hypothesized to be Associated with Planting of Insecticide-treated Maize Seed near Elbow Lake, Minnesota

Guideline Requirements

None

Author

David L. Fischer

Completion Date

July 2, 2012

Submitter:

Bayer CropScience LP

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Research Triangle Park, North Carolina 27709

1.0 **Background**

On May 2, 2012 Bayer CropScience became aware that a beekeeper, Mr. Steve Ellis, had observed a bee kill at a holding yard near Barrett, Minnesota. Bayer's Dr. David Fischer reached Mr. Ellis by phone on Friday, May 4 and obtained permission to visit this bee yard in order to conduct an investigation into the cause of the incident. Mr. Ellis stated he observed large numbers of dead bees, and some behaviorally impaired bees that were unable to fly and crawling on ground. He also described seeing some incapacitated bees exhibiting "twitching" movements that he thought indicated pesticide poisoning.

These observations were first noticed on May 1 when an NBC News crew was visiting his bee yard. Film of dead and crawling bees taken at Mr. Ellis's bee yard were included in a story about allegations that insecticides used as corn seed treatments may be contributing to the decline of honey bee colonies in the United States. This story was aired during the NBC Nightly News broadcast of May 10, 2012. The shots below of dead bees lying on the ground in front of hives were shown.

Dead bees near hives of S. Ellis as filmed by NBC News on May 1, 2012

NBC News correspondent Anne Thompson, while pointing to dead bees on the ground in front of a hive, asked Mr. Ellis "Normally in the Spring do you see this many dead bodies?" and Mr. Ellis replies "Normally in the Spring we shouldn't see this kind of a mortality event occurring at the front door of a hive." This is immediately followed by film footage of Ellis lifting a frame from an open hive box followed by a shot of several live bees crawling on his open hand (see photos below). During this footage, Thompson states "Some of the bees are clearly incapacitated or stunned" and Ellis says during the shot of bees crawling on his hand "These bees are not capable of flying."

S. Ellis removing a hive frame and holding "incapacitated or stunned" bees.

Mr. Ellis stated during the initial phone conversation on May 4, 2012 with Dr. Fischer that there were 1346 honey bee colonies present in the bee yard on May 1 when the incident was noted. When asked how many of these had elevated levels of mortality, he replied "1346." When asked to estimate the severity of the observed mortality in terms of percentage of adult bees in the hive, he replied "about 5%". Assuming a colony had 30,000 adult bees, this would mean there were about 1500 dead bees per hive.

Mr. Ellis reported the incident to the Minnesota Department of Agriculture on May 1 and submitted a written incident report to the US EPA a few days later. Mr. Ellis provided a copy of this incident report (Appendix A) as well as local newspaper coverage of the bee kill and NBC News visit (Appendix B) to the BCS team when they arrived in the area on May 8. MDA sent a field inspector to visit the site and collect samples of dead bees and freshly collected bee pollen on May 3, 2012. MDA officials revisited the site on May 9 when BCS scientists were also present and collected additional samples. Dr. Fischer ask MDA personnel whether it would be possible to obtain a copy of the MDA incident report when it was completed and was told it was MDA policy to not make results of such investigations available to third parties such as chemical manufacturers. As of the date of this report, BCS has no knowledge of the results of the MDA investigation.

2.0 **BCS Investigatory Actions**

2.1 <u>Field Methods</u>

A field investigation team consisting of three scientists from Bayer CropScience, Dr. Fischer (BCS Development North America, Environmental Safety), Mark Wrucke and George Simpkins of Development North America, Field Development and Market Support Technical Services), and an expert consultant, Dr. Jerry Bromenshenk of the University of Montana and Bee Alert Technologies, visited the incident site on May 8 and 9. Bromenshenk and Fischer made observations and collected data mainly within the bee yard, while Wrucke and Simpkins surveyed the surrounding landscape and identified the locations of planted cornfields within 2 miles of the bee yard and contact information for the associated growers.

Samples of dead bees, live bees, stored pollen and dislodgable residues from the exterior surfaces of hive boxes were collected by Bromenshenk and Fischer from hives with the largest numbers of dead bees visible on the ground nearby. Soil samples were collected from within the bee yard and from each planted cornfield in the survey area by Wrucke and Simpkins. During the investigation it was learned that Mr. Ellis and his crew were providing the colonies at the bee yard with supplemental food in the form of high fructose corn syrup. Two samples of this food source were collected on May 9th from the operation's supply tank located near Mr. Ellis's home in Barrett, MN. Information regarding the dates of corn planting, types of seeds and seed treatments planted, types of planters, use of talc or graphite additives, and general field conditions during planting were obtained directly from the growers of each of 14 cornfields in the survey area that were planted prior to May 1. Pertinent daily weather data (rainfall, wind direction, etc.) recorded at a National Weather Service station approximately 4 miles west of the bee yard (Elbow Lake, MN) were obtained from wunderground.com.

2.2 Laboratory Analysis

Dead bee samples from each hive were divided into three subsamples, with one subsample sent to the Bayer CropScience Residue Analysis group in Stilwell, KS (hereafter referred to a BCS-Stilwell), a second subsample sent to the USDA Agrimarketing Analytical Services Lab in Gastonia, NC (hereafter referred to as USDA-Gastonia), and the third subsample sent to Bee Alert Technologies in Missoula, MT. The BCS-Stilwell lab analyzed the samples for presence and quantity of clothianidin using a LC-MS-MS analytical method that has been used in many previous studies reviewed by the US EPA. The USDA-Gastonia lab analyzed the samples for presence and quantity of approximately 200 different pesticide active ingredients and metabolites including clothianidin and thiamethoxam using LC-MS-MS and GC-MS-MS methods that have been used in several previously published studies (e.g., Mullin et al. 2010). The subsample sent to Bee Alert Technologies was used to determine presence and quantity of parasitic mites, viruses and spores of *Nosema ceranae*. The virus detection assays were performed by BVS, Inc., Missoula, MT using an integrated virus detection system (IVDS).

3.0 Results

3.1 Interview with Mr. Ellis

On the afternoon of May 8, Mr. Ellis showed the BCS Investigation Team the location of the bee yard and described essentially the same observations that were reported in the NBC News story and in the incident report filed with EPA (Appendix A). Mr. Ellis said his operation has about 2300 honey bee hives in total which he transports back and forth to California each year. The bee yard is a staging location for these shipments. From November to early April the hives are in California. In April, they are shipped on large flatbead trucks to this location and offloaded. Mr. Ellis only could recall the date the first shipment of hives arrived this year. This occurred on April 14, 2012 and the number of hives in this shipment was 26. The other hives arrived later, but Mr. Ellis could not recall the dates. After hives arrive in the yard, they are put in groups of 28-32 for relocation to one of 75 summer apiary sites scattered over four counties in this part of Minnesota.

The process of staging and relocating hives may take several weeks in both the spring and fall, and so this holding yard sometimes contains large numbers of colonies. On the morning of May 9, Fischer counted 591 hives present in the bee yard, which is about half the number Ellis said was present on May 1. On May 9, there was clear evidence of locations where pallets of bees had recently been but had since been removed. Dead bees were obvious on the ground where some of these pallets had been.

On May 1, Ellis said the NBC News crew was filming his hives and actually were the first individuals to notice the large numbers of dead bees on the ground. He said he walked from one length of the yard to the other and noted dead bees on the ground at all of the hives. When asked if it isn't normal to see dead bees on the ground at a holding yard such as this, he said it was unusual to see any dead bees on the ground near the "front door" of a hive in this bee yard. He stated that when normal levels of mortality occur at a hive, other bees remove the bodies and carry them some distance away, so that generally there are few if any dead bees on the ground near the hive. He also said it is not normal to see bees crawling around on the ground except perhaps during chilly weather. During the afternoon on May 1, when the NBC News crew was filming, the temperature was above 70^{o}F.

3.2. Results of Survey of Surrounding Landscape

Fourteen cornfields within a two-mile radius of the bee yard were identified. These fields were numbered for future reference and their locations in relation to the bee yard and other notes taken during the survey process are shown in Figure 1. A summary of planting dates and other pertinent information for these fields that were obtained by visiting each field and talking to each farmer are provided in Table 1 (seed treatments and planter types, etc.) and Table 2 (weather during planting, tillage practices, etc.).

The closest field to the bee yard, lying just to the east, had not yet been planted. This was the only field that seemed capable of being a source of dust drift into the yard, and even for this field, earthen banks, small trees and other vegetation would likely intercept most dust coming from this direction (Figure 2). The only likely exposure scenario for bees of these hives to dust from corn seeds would be from foragers visiting flowers subject to dust deposition in or next to fields as they were being planted and carrying residues back with them. Most of the fields in the area were well tilled and lacked significant numbers of flowering weeds in them, or next to them (see photos in Figure 3). There were blooming dandelions widely scattered in some of the planted corn fields, and growing along the edges of the roadsides and ditches near some of these fields, but their density was not especially high close to any planted cornfields.

The corn fields planted on the days immediately prior to the observed bee kill were fields 2 (planted on April 30th), 5 (April 28), 6 (April 28) and 7 (April 28). These fields lie about 0.25 to 0.5 miles southwest of the bee yard with field 5 being the closest. Field 2 was planted with seeds treated with a low rate of clothianidin. Fields 5, 6 and 7 were planted with seeds treated with a low rate of thiamethoxam. Field 2 lacked flowering weeds in the field but some dandelions were noted as growing in a ditch between the field and a road. Fields 5, 6 and 7 had scattered dandelions in the field.

The bee kill was noted during the afternoon of May 1, after a significant rainfall event had occurred during the early morning hours. Mr. Ellis stated that a farmer he knew was planting past midnight and had to stop when this rain event began. The weather station at the Elbow Lake airport, 4 miles west-northwest of the bee yard recorded 0.95 inches of rain from this event. A rainfall event of this magnitude should have washed off any dust that had been released by corn planting during the previous day or days. This would be expected to eliminate or at least greatly reduce the potential for honey bee exposure to planting-related dust.

3.3 Observations of Bee Mortality

Fischer and Bromenshenk noted dead bees on the ground in front of hives throughout the bee yard. Numerical counts were not taken, as many of these observations involved piles of bees that had died many days previously. If anything, the numbers appeared to be greater than what was shown in the NBC News story. Hives with especially large numbers of dead bees on the ground next to them were selected for residue sampling and hive inspection. Photos were taken showing the relative number of dead bees present, with hive N6 clearly having the largest number (Figure 4). Returning foragers were observed bringing in pollen brightly colored yellow or orange at nearly all the hives sampled (Figure 5). Recently deposits of this brightly colored pollen were sampled for residue analysis from brood frames at a few hives.

3.4 Pesticide Residue Analysis Results

Neither clothianidin nor thiamethoxam were detected in 11 out of 11 dead bee samples analyzed by the USDA-Gastonia lab and in 9 out of 10 dead bee samples analyzed by the BCS Stilwell lab (Table 3). One sample from hive N4 had a residue level of 2.8 ppb according to the BCS-Stilwell analysis, while the split sample from the same hive had a non-detectable level of clothianin according to the USDA-Gastonia analysis. The threshold lethal dose for clothianidin in honey bees is about 1 ng/bee and the LD_{50} dose for oral exposure is about 4 ng/bee. Since individual bees weigh approximately 100 mg, the theoretical concentration expected if a bee ingests a potentially lethal dose is at least 10 ng/g (ppb) while a LD_{50} dose should produce a residue of about 40 ng/g (ppb). In reality, residue levels found in dead bees that died from clothianidin exposure have sometimes been less than this amount. Pistorius et al. (2008) investigated a bee kill incident in southern Germany caused by exposure to dust released from clothiainidin-treated seeds and reported that >95% of samples of dead bees that tested positive for clothianidin exposure had residue levels >5 ppb, and >60% of such samples had residue levels >10 ppb. Based on the above theoretical considerations and real-world results, a detectable residue of clothianidin of <5 ppb in a dead bee sample was interpreted as evidence of exposure, but not as confirmation of cause of death.

Other chemicals detected in the dead bee samples (Table 3) included four agrochemicals (atrazine, azoxystrobin, chlorpyrifos and pyraclostrobin) and four beekeeper applied miticides (2,4 DMPF which is a degradate of amatraz, coumaphos, fluvalinate and thymol). The levels of these compounds that were detected appear to be far below amounts that pose any risk of mortality. For example, the most toxic of these compounds to honey bees is chlorpyrifos which has a LD_{50} value reported by Mullin et al. (2010) of 1220 ng/g bee body weight. The amount of chlorpyrifos detected, 4.0 ppb or 4 ng/g bee body weight, is only 0.33% of the LD_{50}. The detection which represents the greatest proportion of the acute LD_{50} was a concentration of 268 ppb (268 ng/g bee body weight) of fluvalinate, which represented 1.7% of the LD50 value of 15860 ng/g listed by Mullin et al. Exposures <10% of the LD_{50} are assumed by EPA and other regulatory authorities to pose a minimal risk of acute mortality.

One of three stored pollen samples collected from the hives had a measured residue of 21.0 ppb clothianidin according to the analysis by the USDA Gastonia lab. While this is greater than most previously published measurements of clothianidin in pollen, it is well below levels that might pose a risk of mortality if ingested. The lowest dose producing mortality in oral toxicity studies with honey bees is about 1 ng clothianidin per bee. A 100 mg bee would have to ingest 48% of its body weight in pollen containing 21 ppb to ingest a 1 ng dose. Nurse bees, which ingest the most pollen, typically ingest only 6.5% of their body weight per day (Rortais et al. 2005). The other two stored pollen samples had no detectable residues of clothianidin.

Filter paper swipe samples of the exterior surface of 7 of 8 hives had no detectable residues of clothianidin. One sample had a trace level (2.8 ppb). Collectively, these data do not support the hypothesis that significant levels of clothianidin dust drifted into the bee yard. Likewise, a soil sample taken in the bee yard had no detectable residues of clothianidin (Table 4).

Soil samples collected from fields where corn seeds treated with clothianidin or thiamethoxam (which breaks down to clothianidin) had detectable residues of clothianidin ranging from 2 to 22 ppb (Table 4), well within the range expected based on seeding and seed treatment rates. One might ask if exposure of a bee to soil dust with residues in this range is likely to result in mortality. Assuming soil dust contained a clothianidin concentration at the high end of this range (22 ppb or ng/g soil), in order to receive the acute contact LD_{50} dose of 43.9 ng, a bee would have to be covered with 1.95 g of soil dust. This is equivalent to about 19.5 times its body weight! A realisitic soil dust contact level for a foraging bee (maybe 10% of body weight) would pose a minimal risk of acute mortality.

3.5 Bee Parasite and Pathogen Results

Dead and live bee samples lacked significant numbers of Varroa or Tracheal mites (Table 5). *Nosema ceranae* infection levels were moderate (> 1 million spores per bee) to high (>5 million spores per bee) in nearly all sampled hives. The analysis of viral loads conducted by BVS, Inc. found viral loads were medium to high in 9 of 11 samples (Table 5, Appendix 3). The viral loads were highest in the dead bees samples and lower in samples of live bees. A total of 6 known and 1 unknown viruses were detected in the bee samples. The known viruses found included Sacbrood Virus (9 samples), Deformed Wing Virus (7 samples), Kashmir Bee Virus (3 samples), Israeli Acute Paralysis Virus (3 samples), Chronic Paralysis Virus (3 samples) and Acute Bee Paralysis Virus (1 sample). Dead bees samples from hives N1 and N6 had the highest Nosema spore counts and the highest viral loads (Table 5).

4.0 **Discussion**

The timing of this bee kill was coincident with the time of year when corn planting was occurring, however, no fields immediately adjacent to the bee yard were planted to corn just prior to the observed bee mortality, and there were no recently planted corn fields in the general vicinity of the bee yard that had dense stands of bee attractive flowering plants either in or next to the field. The bee yard is adjacent to an agricultural field, but this field was not planted prior to the bee kill event and had still not been planted when BCS scientists visited the area on May 8-9. The bee yard is located in an abandoned gravel pit that has mounds of earth and vegetation along its sides that should be effective at intercepting dust drift coming from any direction. Based on lack of close proximity to planted corn fields and presence of barriers to drift of dust particles into the yard, the potential for direct exposure of these hives to insecticide-laden dust from corn planting should be low.

Residue analysis indicated a general lack of exposure of the bees that had died to clothianidin and thiamethoxam. One sample from one hive had a detectable level of clothianidin in the dead bees, and likewise one of the filter paper samples and one of the pollen samples had a detectable level of clothianidin. However, the levels found were not confirmatory for lethal exposures for bees, and the vast majority of samples had no detectable clothianidin residues. Therefore this bee kill event, which was observed at essentially all hives in the bee yard, appears not to be related to clothianidin exposure.

Dr. Bromenshenk commented that the availability of forage plants in the vicinity of the bee yard was grossly insufficient to support the large number of colonies placed there. In his opinion, it appeared that much of the observable mortality was caused by starvation. Starving colonies typically have piles of dead bees in front of the hive entrance, as was seen in this case. Mr. Ellis admitted his crew had been slow to provide supplemental food to some of the hives and these colonies had in fact starved. The only “dead out” colonies in the yard were admitted cases of starvation.

The colonies sampled had evidence of infection with multiple significant bee pathogens that may also have contributed to the elevated mortality that was observed. Levels of *Nosema ceranae* were in some hives above thresholds where rescue treatments are prescribed (e.g., 5 million spores per bee). Bees afflicted with high levels of *Nosema ceranae* are known to exhibit behavioral symptoms similar to pesticide intoxication. This could explain some of the observations of impaired and “twitching” bees. A Nosema infection reduces the ability of a bee to obtain nutrients from its food and may lead to death from starvation even when the hive has adequate food stores. Virus loads were also very high in several colonies. Varroa and Tracheal mite levels were relatively low, but residues of four different miticides used to control *Varroa* were present in the various samples, suggesting that Varroa mites had been enough of problem in this operation that multiple treatments had been administered. If *Varroa* had been a significant problem, this might explain the high viral loads observed as many of these viruses are transmitted by *Varroa*.

5.0 **Conclusion**

Based on lack of clothianidin or thiamethoxam residues in 11 out of 11 dead bee samples analyzed by the USDA-Gastonia, and lack of clothianidin residues in 9 out of 10 dead bee samples analyzed by BCS-Stilwell, with the one positive sample having a low residue level not confirmatory of cause of death, it is concluded that exposure to these insecticides was not the cause of this bee mortality incident. The observed bee mortality may have been caused by malnutrition and various bee diseases.

6.0 **Literature Cited**

Mullin CA, Frazier M, Frazier JL, Ashcraft S, Simonds R, vanEngelsdorp D, Pettis, J. 2010. High levels of miticides and agrochemicals in North American Apiaries: Implications for Honey Bee Health. PLoS ONE 5(3): e9754. doi:10.1371/journal.pone.0009754.

Pistorius J., Bischoff G, Heimbach U, and Stahler M. 2009. Bee poisoning incidents in Germany in spring 2008 caused by abrasion of active substance from treated seeds during sowing of maize. P 118-126 in P.A. Oomen, H.M. Thompson (Editors), Hazards of pesticides to bees, 10th International Symposium of the ICP-BR Bee Protection Group. Bucharest (Romania), October 8-10, 2008. *Archives of Julius Kühn Institute* 423.

Rortais, A., G. Arnold, M.P. Halm & F. Touffet-Briens (2005): Modes of honeybee exposure to systemic insecticides: Estimated amounts of contaminated pollen and nectar consumed by different categories of bees. Apidologie **36**: 71-83.

Personal privacy information

Table 1. Planting information for corn fields within two miles of the bee yard.

Field	Farmer*	Planting date	Field conditions at planting	Planter type	Seed hybrid	Seed treat-ment	Seed additive	
							Type	Rate
1	[redacted]	26 April	Good moisture; limited dust	JD 1790 vacuum	Pioneer 38H08 & P8581R	Cruiser 250	talc	1/4 cup/bag
2	[redacted]	30 April	Good moisture; limited dust	JD 1780 vacuum	Dekalb DKC44-92 & Channel 192-09VT3P	Poncho 250	talc	1/4 - 1/2 cup/bag
3	[redacted]	21 April	Good moisture; limited dust	IH 1250 vacuum	Dekalb DKC45-51 & DKC46-07 RIB	Poncho 250	Talc + Graphite	suggested rate
4	[redacted]	26 April	Good moisture; limited dust	JD 1780 vacuum	Pioneer 38A55	Cruiser 250	Talc	1/4 - 1/2 cup/bag
5	[redacted]	28 April	Good moisture; limited dust	JD 1780 vacuum	Pioneer 38H08	Cruiser 250	Talc	1/4 -1/2 cup/bag
6	[redacted]	28 April	Good moisture; limited dust	JD 1780 vacuum	Pioneer 38H08	Cruiser 250	Talc	1/4 -1/2 cup/bag
7	[redacted]	28 April	Good moisture; limited dust	JD 1780 vacuum	Pioneer 38H08	Cruiser 250	Talc	1/4 -1/2 cup/bag
8	[redacted]	21 April	Good moisture; limited dust	IH 1250 vacuum	Dekalb DKC45-51 & DKC46-07 RIB	Poncho 250	Talc + Graphite	suggested rate
9	[redacted]	23 April	Good moisture; limited dust	JD 7300 vacuum	Dekalb DKC48-12 & DKC46-20 RIB	Poncho 250	Talc	1/2 - 3/4 cup/bag
10	[redacted]	24 April	Good moisture; limited dust	JD 7300 vacuum	Dekalb DKC48-12 & DKC46-20 RIB	Poncho 250	Talc	1/2 - 3/4 cup/bag
11	[redacted]	24 April	Good moisture; limited dust	JD 7300 vacuum	Dekalb DKC48-12 & DKC46-20 RIB	Poncho 250	Talc	1/2 - 3/4 cup/bag
12	[redacted]	19 April	Dry and dusty	JD DB44 central fill vac.	Dekalb DKC48-12 RIB	Poncho 250	Talc	1/4 cup/bag
13	[redacted]	20 April	Good moisture; limited dust	IH 1250 vacuum	Dekalb DKC45-51 & DKC46-07 RIB	Poncho 250	Talc + Graphite	suggested rate
14	[redacted]	20 April	Good moisture; limited dust	IH 1250 vacuum	Dekalb DKC45-51 & DKC46-07 RIB	Poncho 250	Talc + Graphite	suggested rate

*Names of growers have been blacked out in publically released versions of this report.

Table 2. Weather, tillage and presence of flowering weeds during corn planting.

Field	Planting date	Wind speed and direction at planting	First rain event after planting	Rainfall amount	Tillage at planting	Blooming plants at planting
1	26 April	11 mph NE	27 April	0.09"	clean tilled	Dandelions in road ditch
2	30 April	8 mph S	1 May	0.95"	clean tilled	Dandelions in road ditch
3	21 April	14 mph SSW	21 April	0.20"	clean tilled	A few dandelions in ditch
4	26 April	11 mph NE	27 April	0.09"	tilled	Scattered dandelions in field
5	28 April	15 mph ESE	28 April	0.13"	tilled	Scattered dandelions in field
6	28 April	15 mph ESE	28 April	0.13"	tilled	Scattered dandelions in field
7	28 April	15 mph ESE	28 April	0.13"	tilled	Scattered dandelions in field
8	21 April	14 mph SSW	21 April	0.20"	clean tilled	A few dandelions in ditch
9	23 April	6 mph S	27 April	0.09"	clean tilled	Dandelions in road ditch
10	24 April	10 mph ESE	27 April	0.09"	clean tilled	Dandelions in road ditch
11	24 April	10 mph ESE	27 April	0.09"	clean tilled	Dandelions in road ditch
12	19 April	7 mph E	21 April	0.20"	clean tilled	A few dandelions in ditch
13	20 April	3 mph S	21 April	0.20"	clean tilled	A few dandelions in ditch
14	20 April	3 mph S	21 April	0.20"	clean tilled	A few dandelions in ditch

Table 3. Analytical chemistry results for samples taken at selected bee hives. Measured concentrations are in ng/g (parts per billion).

		BCS-Stilwell	USDA-Gastonia		
Hive	**Sample Type**	**Clothianidin (ppb)**	**Clothianidin (ppb)**	**Thiamethoxam (ppb)**	**Other chemicals detected (ppb)**
N1	**Dead bees** (2 samples)	ND, NA	ND, ND	ND, ND	azoxystrobin (6.7, ND) coumaphos (1.5, 1.6) fluvalinate (ND, 2.0) thymol (162, 170)
N2	Hive surface	ND	NA	NA	NA
N3	Dead bees	ND	ND	ND	fluvalinate (2.6) thymol (164)
	Hive surface	2.8	NA	NA	NA
N4	Dead bees	2.8	ND	ND	coumaphos (1.3) fluvalinate (4.4) pyraclostrobin (12.6) thymol (235)
	Hive surface	ND	NA	NA	NA
N5	Dead bees	ND	ND	ND	2,4 DMPF (9.1) chlorpyrifos (4.0) coumaphos (104) coumaphos oxon (12.7) fluvalinate (268) pyraclostrobin (24.5) thymol (886)
N6	Dead bees	ND	ND	ND	fluvalinate (2.0) thymol (87.3)
	Pollen	NA	ND	ND	azoxystrobin (5.1) coumaphos (7.2) fluvalinate (3.1) thymol (78.1)
N7	Dead bees	ND	ND	ND	thymol (96.1)
	Hive surface	ND	NA	NA	NA
N8	Dead bees	ND	ND	ND	coumaphos (12.3) fluvalinate (18.9) thymol (180)
	Hive surface	ND	NA	NA	NA
N9	Dead bees	ND	ND	ND	coumaphos (2.7) fluvalinate (3.1) thymol (85.4)
	Pollen	NA	ND	ND	2,4, DMPF (10.5) azoxystrobin (169) coumaphos (2.7) fluvalinate (22.6) pyraclostrobin (3.4)

					thymol (168)
	Hive surface	ND	NA	NA	NA
N10	Dead bees	ND	ND	ND	coumaphos (5.0) fluvalinate (9.8) thymol (67.1)
	Hive surface	ND	NA	NA	NA
N11	Dead bees	ND	ND	ND	thymol (331)
	Pollen	NA	21.0	ND	atrazine (6.3) coumaphos (3.3) fluvalinate (10.9) thymol (240)
	Hive surface	ND	NA	NA	NA

ND = None detected. Limit of detection = 1 ng/g for clothianidin. NA = no analysis performed. Dead bees were collected from off the ground; pollen was collected from recent deposits to brood frames; exterior of hive was wiped with filter paper.

Table 4. Clothianidin concentrations measured in soil samples.

Location (see Fig 1)	Seed Treatment	Clothiandin concentration (ppb)
Field 1	Cruiser 250	4.78
Field 2	Poncho 250	7.46
Field 3	Poncho 250	21.65
Field 4	Cruiser 250	2.69
Field 5	Cruiser 250	21.52
Field 6	Cruiser 250	2.06
Field 7	Cruiser 250	4.17
Field 8	Poncho 250	11.96
Field 9	Poncho 250	3.06
Field 10	Poncho 250	6.30
Field 11	Poncho 250	14.17
Field 12	Poncho 250	2.41
Field 13	Poncho 250	7.91
Field 14	Poncho 250	12.13
Bee yard	none	ND

Table 5. Results of Analysis of Bee Samples for Parasites and Pathogens

Hive	Sample type	Varroa mites[1]	Tracheal mites[1]	*Nosema ceranae* spores[2]	Total Virus Load[1]	Individual Virus Loads[3]					
						DWV	KBV	IAPV	ABPV	SBV	CPV
N1	Dead bees	ND	ND	10.8	42100		12190	11500		11130	7280
N2	Live bees	1	ND	4.2	8680			3710	3000	1400	570
N3	Live bees	1	ND	1.0	2240	1220				1020	
N4	Live bees	ND	ND	1.4	2710	1610				1100	
N5	Live bees	ND	ND	8.2	NA						
N6	Dead bees	ND	ND	12.0	83340	33980	30700			18660	
N6	Returning forager bees	ND	ND	4.8	10210		5320			3110	
N6	Live bees	2	ND	3.2	1480	1000				480	
N8	Live bees	ND	ND	2.2	11340	4270		4020		3050	
N9	Live bees	1	ND	ND	2510					1250	950
N10	Live bees	ND	ND	1.8	270	270					
N11	Live bees	ND	ND	1.4	100	100					

[1] Number counted per sample

[2] Number of spores x 10^6 per bee

[3] DWV = Deformed Wing Virus, KBV = Kashmir Bee Virus, IAPV = Israeli Acute Paralysis Virus, ABPV = Acute Bee Paralysis Virus, SBV = Sacbrood Virus, CPV = Chronic Paralysis Virus.

Red shading indicates a high infection level

Yellow shading indicates a medium infection level

No shading indicates a low virus infection level

ND = None Detected, NA = No Analysis performed

Figure 1. Map of the bee yard in relation to planted corn fields. This Google Map image was used as a template for recording notes during the survey of the surrounding farmland. Agricultual fields planted in corn were numbered as indicated. NP = not planted. NW = no flowering weeds. North is at the top of the map.

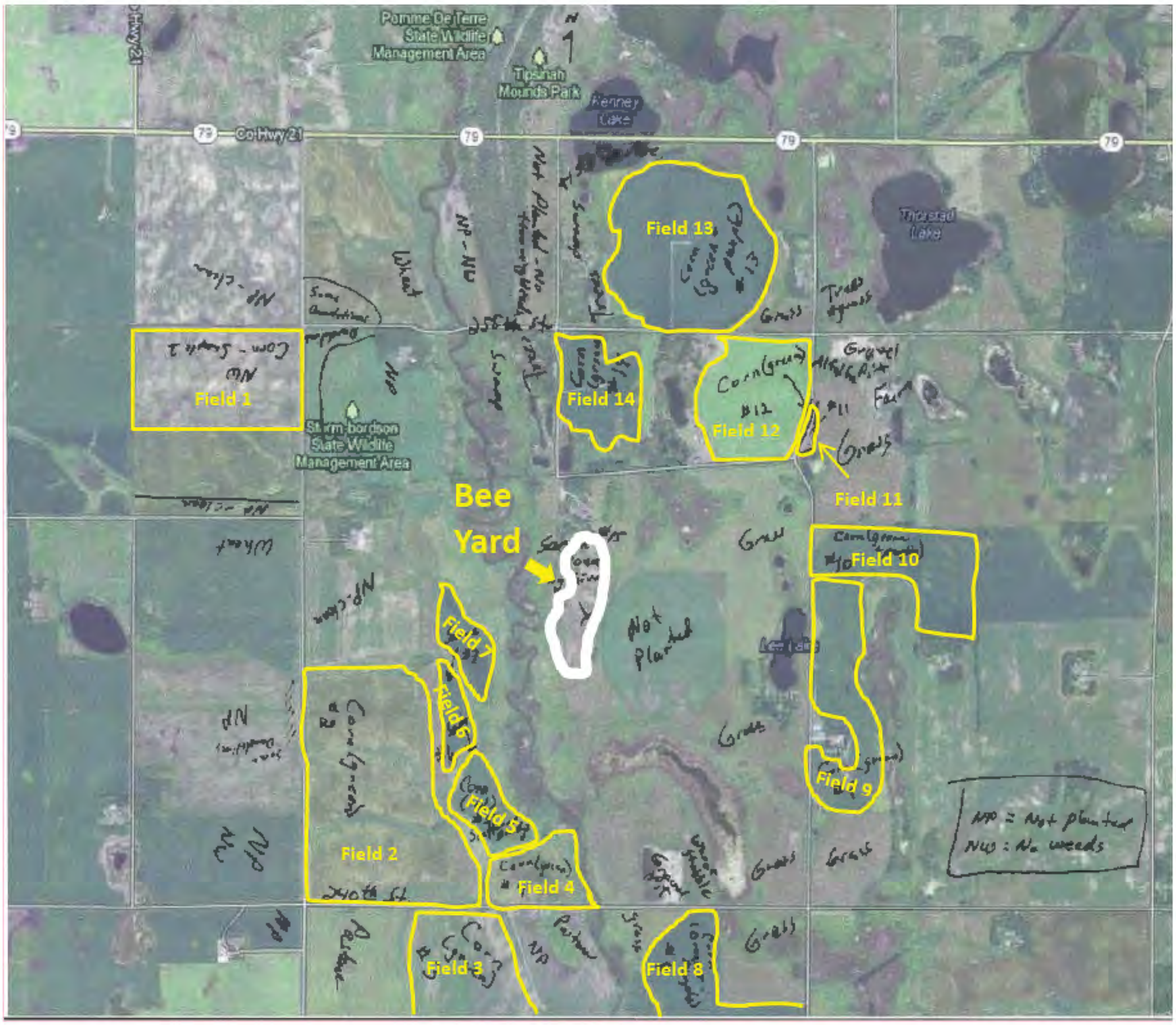
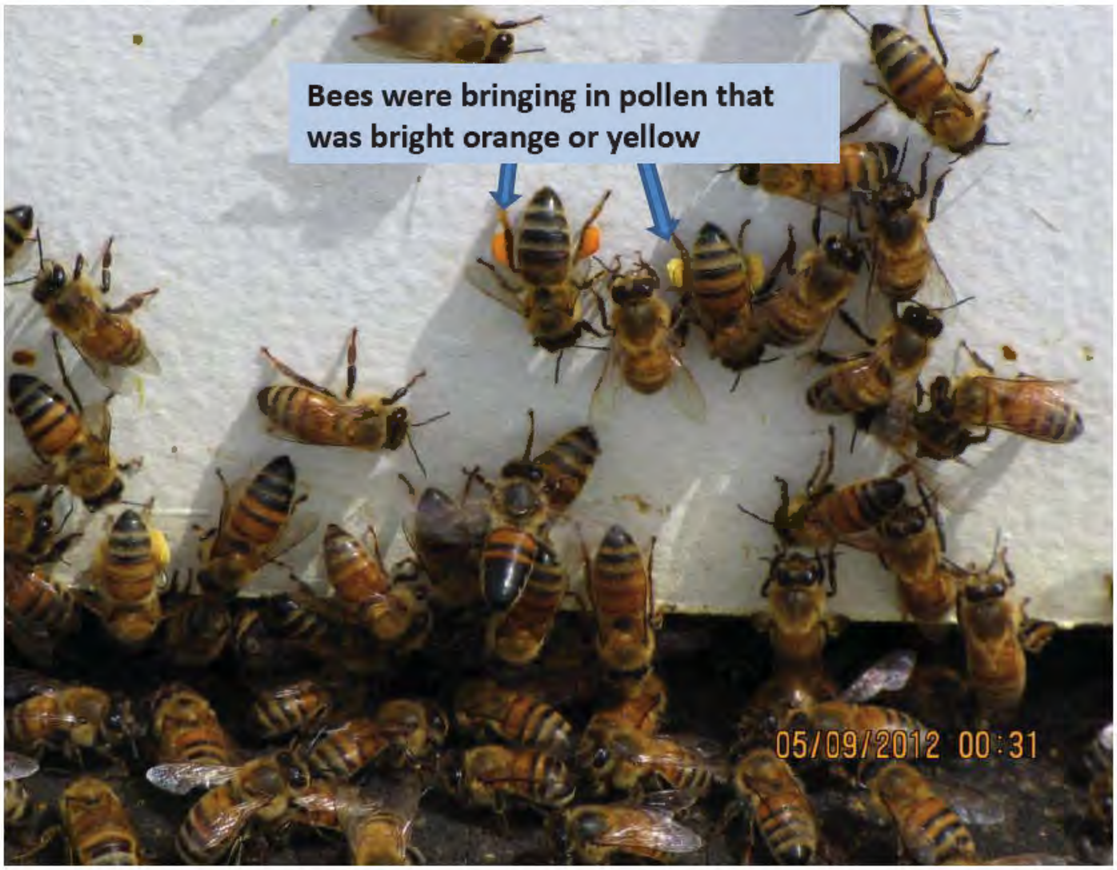


Figure 2. Hives in the bee yard were in a slight depression with earthen banks, small trees and other vegetation providing a barrier to dust drift into the yard. The closest agricultural field to the bee yard was located behind and to the right of the dirt mounds behind the hives shown here.

Figure 3. The agricultural landscape was surveyed to identify recently planted cornfields and presence of bee attractive flowering weeds such as dandelions. Most fields were well tilled and lacked flowering weeds (top left, top right, and middle right photos) but dandelions were present in ditches next to fields (middle left photo) and widely scattered in some planted fields (bottom photo).

Figure 4. Examples of hives selected for sampling on the basis of numerous dead bees on the ground near the front entrance. Hive N6 (shown on left) had the largest number of dead bees of any hive in the bee yard.

Figure 5. Foraging bees were observed bringing into the hive pollen that was mainly bright yellow or orange in color. Mr. Ellis said the bright yellow pollen came from dandelions.



Appendix A. Incident Report Filed With EPA.

Bee Kill incident in stockpile location Elbow Lake, MN -May 1, 2012
Official Incident Report to US EPA

Old Mill Honey Company operates rough ly 2,300 hi ves of bees in Minnesota; during the summer months we operate principally for honey production, and in California during the winter principally for overwintering and paid almond pollination. April is a very busy month for us as the bees are transported from California to Minnesota.

On Tuesday May 1st 2012, in the early afternoon, while filming a news piece for NBC News, it became apparent that there was an abnormal mortality event in progress in the holding yard of bees. The beehives are located on an approximately 60 acre piece of property owned by a gravel company, currently not in active use. Bees were observed dead in front of the hives, as well as crawling on the ground unable to fly, some exhibited trembling and twitching on their backs unable to right themselves. Th e NBC film crew, as well as local reporter, Chris Ray of the Grant County Herald recorded these symptoms and took pictures of the dead and dying bees.

As a part of the NBC film piece, we met with a local farmer who shared with us the details of the corn variety he was planting, which is typical for this area. His seed bag label was a Pioneer variety, P9630AM1containing "Liberty Link, Herculex XTRA, Poncho 1250, and Optimum Acre Max 1. The back of the seed bag tag read "This seed is treated at the manufacturer's recommended rates with Fludoxonil, Mefenoxam, Thiabendazole, and Azoxystrobin fungacides, Thiamethoxin and Clothianidin insecticides and Bacillus Firm us."

He mentioned that due to good seeding conditions he had been planting the night before, (April 30) until12:30am to get the field seeded before the expected rain. Many other area farmers worked long into the night that night as well to get the corn planted.

As soon as I realized that this was a pesticide poisoning, I called John Peckham at the Minnesota Depa rtment of Agriculture (MDA) to report a bee kill and request a pesticide inspection to determine the responsible chemical. At 4:00pm May 151 I left a voice mail for him to contact me regarding a bee kill incident

Thursday May 3rd, the MDA sent out a field inspector Mark Magnuson to sample for pesticide poisoning. I met Mark at 11:00 am and led him to the bee location 4 miles east of Elbow Lake Minnesota. Mark put on a bee suit and insisted on being the only person to touch any of the sample material. He gathered up approximately 2 cups of freshly dead a nd dying bees, as well as 2 cups of freshly gathered dandelion pollen from combs within the hives next to the brood nest Mark made efforts made to only scrape off the bright yellow pollen of Dandelions to ensure the sample would be of fresh pollen recently gathered,
rather than older residual pollen from a previous date. A MDA case file was established: MUM-129001225.

Mark sampled dandelion pollen, because these weeds are heavily flowering at the borders of the corn fields, as well as many volunteers which were growing out in the fields. Bees had been gathering nectar and pollen primarily from this one source.

While gathering the dead and dying bees on Thursday with Mark, we observed many healthy bees attempting to fly off with dead or dying bees in an attempt to get them further away from the hives. One dead queen bee was found and placed with the other dead bees in the sample.

On Thursday, May 3rd I received a call from lain Kelly of Bayer Crop Science (BCS). He had been informed at the PPDC meeting in Washington by David Hackenberg of my incident, and wanted to know some details. He asked if there were blooming crops or weeds present in the fields, and at the edges of fields. I told him yes, the fields were heavily peppered with blooming dandelions. I asked him if it is customary to have both Thiamathoxin and Clothianidin in a seed treatment, and he was surprised that both were being used together.

David Fischer of BCS called on Friday to follow up on this incident, and wanted to arrange for a site visit by himself and a bee expert. I indicated that I would be receptive as long as they would share any findings of theirs with me. He tentatively set up Tuesday May 8 for that inspection. He speculated that the seed treatment might have been improperly bonded if a second neonicitiniod was added in the seed dressing process.

There were 1,346 hives of honey bees present in the holding yard on May 1, 2012. The replacement value of these bees at this time of year would be $155 per hive or $208,630. Strength and long term viability of the hives is in question both for the upcoming honey production season as well as next season's pollination contracts. Strength and viability are critical factors for both endeavors. All of the hives exhibited unusual mortality symptoms described above.

Steve Ellis
President
Old Mill Honey Co.
20501CoRd 5
Barrett, MN 56311

Appendix B. Analytical results received from USDA-Gastonia Lab

LIMS ID	Commodity	Customer Sample ID	2,4 Dimethylphenyl formamide (DMPF)	3-Hydroxycarbofuran	Acephate	Acetamiprid	Aldicarb	Aldicarb sulfone	Aldicarb sulfoxide
AJ28142	Bees	Bayer-N1-A	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.
AJ28143	Bees	Bayer-N1-B G	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.
AJ28144	Bees	Bayer-N3-B G	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.
AJ28145	Bees	Bayer-N4-B G	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.
AJ28146	Bees	Bayer-N5-A G	9.1	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.
AJ28147	Bees	Bayer-N6-A G	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.
AJ28148	Bees	Bayer-N6-C G	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.
AJ28149	Pollen	Bayer-N6-P	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.
AJ28150	Bees	Bayer-N7-A G	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.
AJ28151	Bees	Bayer-N8-B G	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.
AJ28152	Bees	Bayer-N9-B G	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.
AJ28153	Pollen	Bayer-N9-P	10.5	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.
AJ28154	Bees	Bayer-N10-B G	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.
AJ28155	Bees	Bayer-N11-C G	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.
AJ28156	Pollen	Bayer-N11-P	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.
AJ28157	High Fructose Corn Syrup	55 HFC-1	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.
AJ28158	High Fructose Corn Syrup	55 HFC-2	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.

LIMS ID	Commodity	Customer Sample ID	Amicarbazone	Atrazine	Bendiocarb	Carbaryl	Carbendazim (MBC)	Carbofuran	Chlorferone
AJ28142	Bees	Bayer-N1-A	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.
AJ28143	Bees	Bayer-N1-B G	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.
AJ28144	Bees	Bayer-N3-B G	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.
AJ28145	Bees	Bayer-N4-B G	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.
AJ28146	Bees	Bayer-N5-A G	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.
AJ28147	Bees	Bayer-N6-A G	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.
AJ28148	Bees	Bayer-N6-C G	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.
AJ28149	Pollen	Bayer-N6-P	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.
AJ28150	Bees	Bayer-N7-A G	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.
AJ28151	Bees	Bayer-N8-B G	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.
AJ28152	Bees	Bayer-N9-B G	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.
AJ28153	Pollen	Bayer-N9-P	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.
AJ28154	Bees	Bayer-N10-B G	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.
AJ28155	Bees	Bayer-N11-C G	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.
AJ28156	Pollen	Bayer-N11-P	N.D.	6.3	N.D.	N.D.	N.D.	N.D.	N.D.
AJ28157	High Fructose Corn Syrup	55 HFC-1	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.
AJ28158	High Fructose Corn Syrup	55 HFC-2	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.

LIMS ID	Commodity	Customer Sample ID	Clofentezine	Clothianidin	Coumaphos	Coumaphos oxon	Cyprodinil	Diazinon	Diflubenzuron
AJ28142	Bees	Bayer-N1-A	N.D.	N.D.	1.5	N.D.	N.D.	N.D.	N.D.
AJ28143	Bees	Bayer-N1-B G	N.D.	N.D.	1.6	N.D.	N.D.	N.D.	N.D.
AJ28144	Bees	Bayer-N3-B G	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.
AJ28145	Bees	Bayer-N4-B G	N.D.	N.D.	1.3	N.D.	N.D.	N.D.	N.D.
AJ28146	Bees	Bayer-N5-A G	N.D.	N.D.	104	12.7	N.D.	N.D.	N.D.
AJ28147	Bees	Bayer-N6-A G	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.
AJ28148	Bees	Bayer-N6-C G	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.
AJ28149	Pollen	Bayer-N6-P	N.D.	N.D.	7.2	N.D.	N.D.	N.D.	N.D.
AJ28150	Bees	Bayer-N7-A G	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.
AJ28151	Bees	Bayer-N8-B G	N.D.	N.D.	12.3	N.D.	N.D.	N.D.	N.D.
AJ28152	Bees	Bayer-N9-B G	N.D.	N.D.	2.7	N.D.	N.D.	N.D.	N.D.
AJ28153	Pollen	Bayer-N9-P	N.D.	N.D.	2.7	N.D.	N.D.	N.D.	N.D.
AJ28154	Bees	Bayer-N10-B G	N.D.	N.D.	5	N.D.	N.D.	N.D.	N.D.
AJ28155	Bees	Bayer-N11-C G	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.
AJ28156	Pollen	Bayer-N11-P	N.D.	21	3.3	N.D.	N.D.	N.D.	N.D.
AJ28157	High Fructose Corn Syrup	55 HFC-1	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.
AJ28158	High Fructose Corn Syrup	55 HFC-2	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.

LIMS ID	Commodity	Customer Sample ID	Dinotefuran	Diphenamid	Ethofumesate	Etoxazole	Fenbuconazole	Fenpyroximate	Flonicamid
AJ28142	Bees	Bayer-N1-A	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.
AJ28143	Bees	Bayer-N1-B G	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.
AJ28144	Bees	Bayer-N3-B G	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.
AJ28145	Bees	Bayer-N4-B G	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.
AJ28146	Bees	Bayer-N5-A G	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.
AJ28147	Bees	Bayer-N6-A G	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.
AJ28148	Bees	Bayer-N6-C G	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.
AJ28149	Pollen	Bayer-N6-P	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.
AJ28150	Bees	Bayer-N7-A G	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.
AJ28151	Bees	Bayer-N8-B G	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.
AJ28152	Bees	Bayer-N9-B G	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.
AJ28153	Pollen	Bayer-N9-P	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.
AJ28154	Bees	Bayer-N10-B G	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.
AJ28155	Bees	Bayer-N11-C G	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.
AJ28156	Pollen	Bayer-N11-P	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.
AJ28157	High Fructose Corn Syrup	55 HFC-1	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.
AJ28158	High Fructose Corn Syrup	55 HFC-2	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.

LIMS ID	Commodity	Customer Sample ID	Fludioxonil	Fluoxastrobin	Hexythiazox	Hydroxychlorothalonil	Imazalil	Imidacloprid	Imidacloprid 5-hydroxy	Imidacloprid olefin
AJ28142	Bees	Bayer-N1-A	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.
AJ28143	Bees	Bayer-N1-B G	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.
AJ28144	Bees	Bayer-N3-B G	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.
AJ28145	Bees	Bayer-N4-B G	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.
AJ28146	Bees	Bayer-N5-A G	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.
AJ28147	Bees	Bayer-N6-A G	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.
AJ28148	Bees	Bayer-N6-C G	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.
AJ28149	Pollen	Bayer-N6-P	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.
AJ28150	Bees	Bayer-N7-A G	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.
AJ28151	Bees	Bayer-N8-B G	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.
AJ28152	Bees	Bayer-N9-B G	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.
AJ28153	Pollen	Bayer-N9-P	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.
AJ28154	Bees	Bayer-N10-B G	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.
AJ28155	Bees	Bayer-N11-C G	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.
AJ28156	Pollen	Bayer-N11-P	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.
AJ28157	High Fructose Corn Syrup	55 HFC-1	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.
AJ28158	High Fructose Corn Syrup	55 HFC-2	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.

LIMS ID	Commodity	Customer Sample ID	Indoxacarb	Linuron	Metalaxyl	Methamidophos	Methomyl	Methoxyfenozide	Myclobutanil
AJ28142	Bees	Bayer-N1-A	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.
AJ28143	Bees	Bayer-N1-B G	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.
AJ28144	Bees	Bayer-N3-B G	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.
AJ28145	Bees	Bayer-N4-B G	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.
AJ28146	Bees	Bayer-N5-A G	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.
AJ28147	Bees	Bayer-N6-A G	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.
AJ28148	Bees	Bayer-N6-C G	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.
AJ28149	Pollen	Bayer-N6-P	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.
AJ28150	Bees	Bayer-N7-A G	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.
AJ28151	Bees	Bayer-N8-B G	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.
AJ28152	Bees	Bayer-N9-B G	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.
AJ28153	Pollen	Bayer-N9-P	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.
AJ28154	Bees	Bayer-N10-B G	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.
AJ28155	Bees	Bayer-N11-C G	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.
AJ28156	Pollen	Bayer-N11-P	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.
AJ28157	High Fructose Corn Syrup	55 HFC-1	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.
AJ28158	High Fructose Corn Syrup	55 HFC-2	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.

LIMS ID	Commodity	Customer Sample ID	Norflurazon	Oxamyl	Phosmet	Propazine	Pymetrozine	Pyraclostrobin	Pyridaben
AJ28142	Bees	Bayer-N1-A	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.
AJ28143	Bees	Bayer-N1-B G	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.
AJ28144	Bees	Bayer-N3-B G	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.
AJ28145	Bees	Bayer-N4-B G	N.D.	N.D.	N.D.	N.D.	N.D.	12.6	N.D.
AJ28146	Bees	Bayer-N5-A G	N.D.	N.D.	N.D.	N.D.	N.D.	24.5	N.D.
AJ28147	Bees	Bayer-N6-A G	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.
AJ28148	Bees	Bayer-N6-C G	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.
AJ28149	Pollen	Bayer-N6-P	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.
AJ28150	Bees	Bayer-N7-A G	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.
AJ28151	Bees	Bayer-N8-B G	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.
AJ28152	Bees	Bayer-N9-B G	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.
AJ28153	Pollen	Bayer-N9-P	N.D.	N.D.	N.D.	N.D.	N.D.	3.4	N.D.
AJ28154	Bees	Bayer-N10-B G	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.
AJ28155	Bees	Bayer-N11-C G	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.
AJ28156	Pollen	Bayer-N11-P	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.
AJ28157	High Fructose Corn Syrup	55 HFC-1	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.
AJ28158	High Fructose Corn Syrup	55 HFC-2	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.

LIMS ID	Commodity	Customer Sample ID	Pyrimethanil	Pyriproxyfen	Sethoxydim	Simazine	Spinosad	Tebuconazole	Tebufenozide
AJ28142	Bees	Bayer-N1-A	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.
AJ28143	Bees	Bayer-N1-B G	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.
AJ28144	Bees	Bayer-N3-B G	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.
AJ28145	Bees	Bayer-N4-B G	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.
AJ28146	Bees	Bayer-N5-A G	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.
AJ28147	Bees	Bayer-N6-A G	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.
AJ28148	Bees	Bayer-N6-C G	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.
AJ28149	Pollen	Bayer-N6-P	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.
AJ28150	Bees	Bayer-N7-A G	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.
AJ28151	Bees	Bayer-N8-B G	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.
AJ28152	Bees	Bayer-N9-B G	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.
AJ28153	Pollen	Bayer-N9-P	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.
AJ28154	Bees	Bayer-N10-B G	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.
AJ28155	Bees	Bayer-N11-C G	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.
AJ28156	Pollen	Bayer-N11-P	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.
AJ28157	High Fructose Corn Syrup	55 HFC-1	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.

LIMS ID	Commodity	Customer Sample ID	Tebuthiuron	Thiabendazole	Thiacloprid	Thiamethoxam	Triadimenol
AJ28142	Bees	Bayer-N1-A	N.D.	N.D.	N.D.	N.D.	N.D.
AJ28143	Bees	Bayer-N1-B G	N.D.	N.D.	N.D.	N.D.	N.D.
AJ28144	Bees	Bayer-N3-B G	N.D.	N.D.	N.D.	N.D.	N.D.
AJ28145	Bees	Bayer-N4-B G	N.D.	N.D.	N.D.	N.D.	N.D.
AJ28146	Bees	Bayer-N5-A G	N.D.	N.D.	N.D.	N.D.	N.D.
AJ28147	Bees	Bayer-N6-A G	N.D.	N.D.	N.D.	N.D.	N.D.
AJ28148	Bees	Bayer-N6-C G	N.D.	N.D.	N.D.	N.D.	N.D.
AJ28149	Pollen	Bayer-N6-P	N.D.	N.D.	N.D.	N.D.	N.D.
AJ28150	Bees	Bayer-N7-A G	N.D.	N.D.	N.D.	N.D.	N.D.
AJ28151	Bees	Bayer-N8-B G	N.D.	N.D.	N.D.	N.D.	N.D.
AJ28152	Bees	Bayer-N9-B G	N.D.	N.D.	N.D.	N.D.	N.D.
AJ28153	Pollen	Bayer-N9-P	N.D.	N.D.	N.D.	N.D.	N.D.
AJ28154	Bees	Bayer-N10-B G	N.D.	N.D.	N.D.	N.D.	N.D.
AJ28155	Bees	Bayer-N11-C G	N.D.	N.D.	N.D.	N.D.	N.D.
AJ28156	Pollen	Bayer-N11-P	N.D.	N.D.	N.D.	N.D.	N.D.
AJ28157	High Fructose Corn Syrup	55 HFC-1	N.D.	N.D.	N.D.	N.D.	N.D.
AJ28158	High Fructose Corn Syrup	55 HFC-2	N.D.	N.D.	N.D.	N.D.	N.D.

Appendix C. Analytical results received from BCS-Stilwell Lab

Sample Location	Honey Bee Samples	% Recovery	Concentration (ppb)
	Bee Control		ND
	Bee QC 1	***99.90***	**9.99**
Hive 1	N1-B-S		**ND**
Hive 11	N11-C-S		**ND**
Hive 3	N3-B-S		**ND**
Hive 4	N4-B-S		**2.76**
Hive 5	N5-A-S		**ND**
Hive 6	N6-A-S		**ND**
Hive 6 duplicate	N6-C-S		**ND**
Hive 7	N7-A-S		**ND**
Hive 8	N8-B-S		**ND**
Hive 9	N9-B-S		**ND**
Hive 10	N10-B-S		**ND**

ND = None Detection (Limit of Detection = 1.0 ppb)

Sample Type and Location	Type of Seed Treatment Planted	Type of Sample	% Recovery	Concentration (ppb)
		Soil control		ND
		Soil QC	93.10	9.31
soil field 1	Cruiser 250	Soil 1		4.78
soil field 2	Poncho 250	Soil 2		7.46
soil field 3	Poncho 250	Soil 3		21.65
soil field 4	Cruiser 250	Soil 4		2.69
soil field 5	Cruiser 250	Soil 5		21.52
soil field 6	Cruiser 250	Soil 6		2.06
soil field 7	Cruiser 250	Soil 7		4.17
soil field 8	Poncho 250	Soil 8		11.96
soil field 9	Poncho 250	Soil 9		3.06
soil field 10	Poncho 250	Soil 10		6.30
soil field 11	Poncho 250	Soil 11		14.17
soil field 12	Poncho 250	Soil 12		2.41
soil field 13	Poncho 250	Soil 13		7.91
soil field 14	Poncho 250	Soil 14		12.13
soil bee yd	Road by hives	Soil 15		ND
		Paper control 1		ND
		Paper QC 1	99.3	9.93
		Paper control 2		ND
		Paper QC 2	97.6	19.52
filter paper hive 2		NC2-A		ND
filter paper hive 3		NC3-A		2.80
filter paper hive 4		NC-4A		ND
filter paper hive 7		NC-7B		ND
filter paper hive 8		NC-8A		ND
filter paper hive 9		NC-9A		ND
filter paper hive 10		NC-10A		ND
filter paper hive 11		NC-11B		ND

ND = none detected (Limit of Detection = 1.0 ppb)

Appendix D. Virus Detection Report received from BVS, Inc.

append to I024308

Re: Update to Minnesota Bee-kill Incident I022342-001
Robert Miller to: Norman Spurling 08/08/2012 06:53 AM

Hi Norm,

Bayer provided the document to the affected beekeeper who then passed it on to me. The document should update incident I023967-001, not I022342-001 as I indicated earlier. Both bee-kill incidents happened to the same beekeeper. One in 2010 and the second in 2012. Have we ever received an in depth bee-kill report like this from Bayer? Isn't the law they provide such reports to us when their product may be involved in a large beekill?

Bob

Norman Spurling When did EPA receive this? I assume it came in... 08/07/2012 08:12:34 AM

From:	Norman Spurling/DC/USEPA/US
To:	Robert Miller/DC/USEPA/US@EPA
Date:	08/07/2012 08:12 AM
Subject:	Re: Update to Minnesota Bee-kill Incident I022342-001

When did EPA receive this? I assume it came in directly from Bayer???
Norman Spurling
6(a)(2) Coordination and Analysis Team Leader
OPP/ITRMD/ISB
703-305-5835

Robert Miller Hi Norm, A draft report from Bayer updating inci... 08/06/2012 12:29:21 PM

From:	Robert Miller/DC/USEPA/US
To:	Norman Spurling/DC/USEPA/US@EPA
Cc:	Thomas Steeger/DC/USEPA/US@EPA, Michael Wagman/DC/USEPA/US@EPA
Date:	08/06/2012 12:29 PM
Subject:	Update to Minnesota Bee-kill Incident I022342-001

Hi Norm,

A draft report from Bayer updating incident I022342-001 is attached.

[attachment "Bayer MN-2012-Bee Incident Report -draft2July-v2.pdf" deleted by Norman Spurling/DC/USEPA/US]

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